



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|-----------------------|------------------|
| 10/803,822 | 03/18/2004 | William Paul Cook | 2003-0718.02/4670-271 | 7046 |

7590 10/25/2005

LEXMARK INTERNATIONAL, INC.
ATT: JOHN J. McARDLE, JR.
740 WEST NEW CIRCLE ROAD
LEXINGTON, KY 40550

EXAMINER

KUMAR, RAKESH

ART UNIT PAPER NUMBER

3654

DATE MAILED: 10/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/803,822 | Applicant(s) COOK ET AL. | |
| | Examiner Rakesh Kumar | Art Unit 3654 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/16/05; 11/12/04; 03/18/2004</u> | 6) <input type="checkbox"/> Other: ____ |

W

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10, 20 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Referring to claims 10, 20 and 33. The applicant discloses in his invention the motor driving a drive roll operating a second speed "substantially equal" to the first speed. It is unclear and indefinite as to what is exactly meant by "substantially equal". It is understood and construed to mean the first and the second speeds are not equal to each other but vary slightly, it can be further construed to mean that the second operating speed is somewhat higher than the first operating speed as to effectively remove and deliver the media sheet from the media path. Appropriate action is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3654

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (U.S. Patent Number 6,837,489).

6. Referring to claims 1, 2, 15 and 17. Kim discloses an apparatus comprising: a motor 70; a pick mechanism consisting of a clutch member 22, gears 21, 25, 11 and a pickup roller 10 operatively connected to the motor 70 (Figure 1 and 3), creating a feed nip region as the roller 10 engages the topmost media sheet in the media tray (Figure 1), the pick mechanism (gears 21, 25, 11 and a pickup roller 10) positioned to move a media sheet 1 from an input tray; a first gear train set 60' (gears 62, 61) having a first ratio and operatively connecting the motor 70 to the pick mechanism (gears 21, 25, 11 and a pickup roller 10); a feed nip created by a distribution roller 50 in contact with the media sheet 1 operatively connected to the motor 70 to receive the media sheet 1 and forward the media sheet 1 along a media path, the feed nip positioned downstream from the pick mechanism (gears 21, 25, 11 and a pickup roller 10); a second gear 80 (gears 81, 82, 83) set having a second gear ratio and operatively connecting the motor 70 to the feed nip created by a distribution roller 50 in contact with the media sheet 1; the motor 70 drives the pick mechanism along with a intermediate roller 110 used to maintain steady tension in the media sheet 1 as it is moved to the feed nip of the distribution roller.

Kim does not disclose positioning a feed nip a distance less than a length of the media sheet downstream from the pick mechanism, in addition Kim does not specifically disclose the pick mechanism to be operating at a first speed and the feed nip roller operating at a different second speed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to reduce the distance between the pick mechanism and the feed nip to be less than the length of the media sheet, so a consistent level of tension in the media sheet is maintained in order to reduce media buckling and misalignment of the media sheet as it is moved along the media path. Further more, Kim discloses a first and a second gear train disposed to transfer power to the pick mechanism and the feed nip roller. These two gear trains are different in configurations and by the number of gears comprising them, thus indicating that the rotational torque and speed transferred by the motor to the above mentioned mechanisms is construed and understood to be different. By maintaining different speeds at the two ends, tension in the media sheet can be maintained. Such a selection would be well within the level of skill of an artisan.

7. Claims 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Schoedinger et al. (U.S. Patent Number 6,227,534).

8. Referring to claim 16. See claim 1. In regards to claim 16 the Schoedinger et al discloses a sheet picker assembly 14 including a gear drive train 38 disposed in a

Art Unit: 3654

housing 40, pivotable about a pivot point 6 (Col 4 lines 17-25) maintaining contact with the media sheets 24 in media tray 32 (Figure 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kim with the teaching of Schoedinger et al. by enclosing the pick mechanism (gears 21, 25, 11 and a pickup roller 10 in Kim) with a housing that is pivotable about an axis and engaging the media sheets in the media tray as taught by Schoedinger et al. As a result, the pivotal arm can be in constant frictional contact with the uppermost sheet by pivoting downwards as the sheets are used up in the tray media, in addition the media tray can be loaded without undue damage to the pick mechanism as the media sheet are placed in the tray.

9. Referring to claim 18. See claim 1. Kim discloses a motor 70 in contact with a first gear train 60' and the second gear train 80. As the motor 70 rotates it drives a secondary gear 71, as gear 71 is rotated the torque is transferred from the motor to gear train 60' and 80 in a forward and a reverse manner (Figure 3) and the rotation of the pickup roller 10 and the distribution roller 50 is also in opposing directions.

10. Referring to claim 19. See claim 1. Kim discloses a first gear train 60' consisting of two gears (62,61) and a second gear train 80 consisting three gears (81, 82, 83). It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kim to include more gear in the first gear train than the number of

Art Unit: 3654

gears in the second gear train. Such as selection would depend on the distance the motor is located with the respect to the pick mechanism, greater the distance the motor is from the pick mechanism, the more gears need to initiate contact with the pick mechanism as discloses by Kim. Such an arrangement of gear selection would be well within the level of skill of an artisan.

11. Claims 3, 4, 5, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claim 1 above in view of Takagi et al. (U.S. Patent Number 4,986,525), and in further view of Park (U.S. Patent Number 6,648,322).

12. Referring to claims 3, 4, 5, 20 and 21. See claim 1. Takagi discloses a sheet feeder device comprising a swing arm 15 having a first gear 16 disposed on the first arm and a second gear 17 disposed on the second arm. Gears 16 and 17 are free to rotate in conjunction with the pivotal gear 14 as a torque is transferred from motor M to feed roller 36 (Figure 2A-2B, Col 5 lines 23-29, Col 7 line 15). The swing arm 15 is positionable between a first orientation with the first gear 16 in contact with idler gear 19 and a second orientation with the second gear 17 in contact with idler gear 20. The swing of the swing arm 15 as shown by Takagi in figure 2A and 2B is understood and construed to be in a range between 0° to 45°.

Takagi does not disclose the first arm having an even number of gears, and the second arm having an odd number of gears.

Park discloses a paper feeder device comprising a movable first arm assembly 43 and a second arm assembly 46 consisting of multiple gears disposed on the arms. The first arm assembly 43 having an even number of gears (43a, 43b, 43c and 43d) and the second arm assembly having an odd number of gears (45, 45b, and 45c) (Figure 6 and 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kim with the teachings of Park in view of Takagi and incorporate a movable swing arm consisting of an even number of gears on a first arm and odd number of gears on the second arm to further vary the rotational speed being transmitted from the motor 70 to the distribution roller 50 as disclosed by Kim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the movable swing arm near a distribution roller as to engage the feed nip with either the first or the second gear to controllably vary the rotational speed of the distribution roller and maintain variable tension as the media sheet progress through the media path.

13. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claim 3 above in view of Takagi et al. in view of Park and in further view of Ha (U.S. Patent Number 6,765,698).

14. Referring to claim 6. Regarding claim 6 Takagi discloses a swing arm with a first arm and the second arm forming an angle of 135°.

Ha discloses a swing arm with a first arm and the second arm forming an angle of 90° see figure 3A and 3A.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to have selected a range of swing arm angles to be between 75°-90° because the range of the angles would depend on the diameter of the gear being engaged (gears 20 and 19 in Takagi) and the location of the gear with respect to the movable arms. An engagement gear with a smaller diameter would require a smaller arm angle as opposed to a engagement gear with a larger gear diameter. Such a selection would be well within the level of skill of an artisan.

15. Claims 7-14 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claim 3 above in view of Takagi et al. in view of Park and in further view of Matsuda (U.S. Patent Number 6,568,674).

16. Referring to claims 7, 8, 9, 10, 11, 12, 13, 14, 22, 23 and 24. See claim 1 and 3. In regards to claim 7 Matsuda discloses a feed apparatus comprising a metering nip created by aligning a discharge roller 23 with a driven roller 24 positioned downstream from the feed nip between rollers 11 and 24 and operating at a speed greater than the speed driving the feed nip rollers 11 and 24 (Figure 2 and 3). Matsuda also discloses the discharge roller 23 having a torsion spring clutch 43 to prevent a slip of the discharge roller 23 when the media sheet is in contact with both the metering nip and the feed nip (Col 5 line 39-60). Further more Matsuda discloses using a one way clutch in the pick roller gear 20 in the pick roller 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kim with the teaching of Matsuda and incorporate a metering nip (roller 23, 24 in Matsuda) on the path beyond the distribution roller 50 in Kim, operating a speed higher than the distribution roller 50 as to prevent media paper slippage, when the media is moving between the feed nip and the metering nip. In addition a slip clutch mechanism may be disposed either in the metering nip rollers or the preceding distribution rollers to prevent a slippage of the rollers as the media sheet traveling at one speed enters a metering nip rotation at a different speed, in a manner a slip clutch can be disposed on the pick mechanism. Such a selection would be well within the level of skill of an artisan.

17. Claims 27-30, 32, 33 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang in view of Matsuda.

18. Referring to claims 27-30, 32, 33 and 35-38. See claim 1 and 3. Kang discloses a method; wherein the step of driving the motor 100 in the first direction results in the first roller 165 moving at a constant speed and the second roller moving at the same constant speed with the motor 100 operating at a constant rate.

Kang does not disclose a method where a first roller 165 and second roller 150 operate at different speeds.

Matsuda discloses a method of feeding sheets comprising a first roller 24 operating at a different rotationally speed as compared to second roller 23 (Col 1 lines 46-55, Col 3 line 25-34, Col 5 lines 40-50). Matsuda also discloses a second roller 23 having a torsion spring clutch 43 to prevent a slip of the discharge roller 23 when the media sheet is in contact with both the metering nip (between roller 24 and 23) and the feed nip (between roller 11 and 24) (Col 5 line 39-60). Further more Matsuda discloses using a one way clutch in the pick roller gear 20 in the pick roller 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kang with the teaching of Matsuda and incorporate rollers (165 and 150 in Kang) to rotate at different speeds, where the convey roller 150 rotates at a faster speed than the pickup roller 165. By varying the rotational speed of the two rollers a steady tension in the media sheet can be maintain as the media sheet progress through the media path. It would have been further obvious to one of ordinary skill in the art at the time the invention was made, to include a free rotating clutch to match the pulling of one of the dispensing rollers, thus reducing paper jams and burn marks caused by two different operating speeds of the rollers. Such a selection would be well within the level of skill of an artisan.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 3654

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

20. Claims 25, 26, 31 and 34 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Kang (U.S. Pub No.: US2004/0109056A1).

21. Referring to claims 25, 31 and 34. See claims 1, 3 and 7. Kang disclose a method of moving a media sheet 11 within an image forming apparatus 1 comprising the steps of: driving a motor 100 in a first direction to rotate a first roller 165 in a forward direction; contacting the media sheet 11 with the first roller 165 and moving the media sheet 11 along a first section of a media path (region described by 12); driving the motor 100 in the first direction to rotate a second roller 150 in the forward direction; contacting the media sheet 11 with the second roller 150 and moving the media sheet along a downstream section of the media path (see curved path of the media 11'; Figure 1, 2, 4, 5 and 8); reversing the motor to a second direction (Page 8, 2nd Col. Line 19-35) and continue rotating the second roller 150 in the forward direction; and continuing contact of the media sheet 11 with the second roller 150 and moving the media sheet 11 along the downstream section of the media path 11'.

22. Referring to claim 26. Kang disclose a method; further comprising rotating the first roller 165 in a forward direction and picking the media sheet 11 from an input tray 10 (Figure 4 and 8).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh Kumar whose telephone number is (517) 272-8314. The examiner can normally be reached on 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Matecki can be reached on (571) 272-6951. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK



KATHY MATECKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600